FENGER (C.)

Total Extirpation of the Vagina for Carcinoma

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TOTAL EXTIRPATION OF THE VAGINA FOR CARCINOMA.[1]

PRIMARY carcinoma of the vagina is so rarely seen that it has been customary of late to publish every case met with in detail. It is desirable that this should be done also for other reasons. The prognosis of the disease is particularly grave; the operative treatment has only been developed of late, and is thus as yet *sub judice*. Thus I concluded, in connection with a case I have met with, to present a brief review of the subject to the Society.

Synopsis.—Primary vaginal carcinoma of four to six months' standing. Large tumor on posterior and left wall. Multiple smaller tumors all over the remainder of the vagina. Extension to the surface of the vaginal portion of the uterus. Total extirpation of the vagina and removal of vaginal portion. Recovery from the operation. Relapse *in loco* two and a half months later. Nephritis. Sent home as incurable.

History.—Mrs. C., of Cedar Falls, Iowa, 60 years old. A grandfather died of cancer of the tongue, an aunt had cancer of the breast. She has six children; the youngest son is now 18 years old. After the first child, thirty years ago, descent of the uterus followed, never causing any serious inconvenience. She has always been a strong and very active woman. Meno-

[1] Read before the Gynecological Society of Chicago, July 22d, 1892.

pause came fifteen years ago, at the age of 45, accompanied with irregular hemorrhages which soon ceased entirely. She was perfectly healthy in the following years. The present illness began six months ago, in August, 1891. At this time she fell from a hammock, striking on the gluteal region, and suffered severe pain; but she could walk, was not confined to bed, and the pain soon disappeared. Two months later she noticed a purulent, odorless discharge from the vagina, which, after some weeks, showed streaks of blood. In October, 1891, she first noticed some pains in the pelvis when she had been on her feet for an unusually long time or taken a long walk; in ordinary daily life she would never feel any pain. Her appetite has been good till a few weeks ago, when she became alarmed about her condition. Bowels were regular, and she has had no symptoms from the bladder until a few weeks ago, when occasionally more frequent urinating was noticed, but not accompanied by pain. The husband thinks that she has lost some in weight and grown pale in the last two months. She herself thinks that she has not emaciated any. A week ago she went to her family physician, who made a careful examination, declared her disease to be of a serious nature and advised her to consult a specialist in Chicago. The digital examination of the vagina was followed by some hemorrhage and pain, and travelling twenty-four hours in a sleeping-car aggravated these symptoms, enough to prevent her from sleeping on the train.

I examined Mrs. C. on January 30th, 1892. I found her a strongly built woman, moderately well nourished, rather pale, although she had lost no blood to account for this; her expression was nervous and anxious. Heart, lungs, abdominal organs, urine, pulse, and temperature were normal.

Vaginal examination revealed a large, hard, nodulated tumor on the posterior and left vaginal wall. It began a half-inch from the introitus, extended upward two and a half inches; its transverse diameter was two and a half to three inches; its borders elevated and hard, the surface uneven, partly ragged, with crevices giving it a cauliflower appearance. From the posterior and left lateral wall of the vagina it extended up into and filled the posterior lacunæ and left lateral fornix. Its apparent thickness was one-half to three-fourths of an inch. Above this tumor no distinct vaginal portion of the uterus could be felt (she was an old woman with small, senile atrophic uterus), but the external

os was found one-half inch above the upper border of the tumor. The place of the vaginal portion felt uneven, as if not covered with smooth mucous membrane, but like an ulcerated or excoriated surface. Close to the borders of the large tumor were a number of flat, rather smooth, roundish nodules or plaques, one-half to one inch in diameter, occupying the right vaginal wall, the right fornix, and anterior vaginal wall, all around the place of the vaginal portion of the uterus. The wall of the vagina between these tumors and the surface of the vaginal portion was not smooth but velvety or warty, rough, uneven, most so nearest to the tumors, gradually becoming smooth out toward the labia minora and in the region of the urethra. The anterior upper triangle of the vagina—that is, the urethral protuberance—felt smooth, and was the only portion of the vagina that was normal.

Combined Rectal and Vaginal Examination.—The tumor on the posterior vaginal wall was three-fourths of an inch thick all over; the wall of the rectum was smooth, soft, and movable against the posterior surface of the tumor. Above the upper border of the tumor was felt the small, freely movable uterus; the lateral ligaments were apparently not thickened and were free from nodules. However, on the left side, where the tumor reaches highest up, there appeared to be somewhat less mobility of tumor and uterus than on the right side. There was no infiltration of the perirectal or inguinal lymph glands.

Diagnosis.—Diffuse malignant tumor (carcinoma or sarcoma) of the whole vagina, extending to the vaginal portion of the uterus; doubtful extension to the left broad ligament.

Plan of Operation.—If, in narcosis, extension to left broad ligament is found, sacral operation for total removal of uterus and vagina; if no extension to broad ligament, total extirpation of the vagina and amputation of the lower cervix from the perineum. Preparation for the operation as usual for vaginal extirpation of the uterus.

Operation on February 8th, 1892, in the presence of the physicians of the Chicago Polyclinic, assisted by Dr. Gudden, of Oshkosh, Drs. Bernauer, Waters, Brougham, and others. Ether narcosis. Examination in narcosis showed condition as stated above, but I found both lateral ligaments freely movable and not infiltrated; uterus small and movable, slightly drawn to the left from shortening of the left fornix vaginæ. The utero-

rectal ligaments and anterior rectal wall were found apparently normal and freely movable. I thus decided on extirpation of the vagina by perineal incision.

The patient being in the lithotomy position, the vagina, held open by Sims' speculum, was found narrow; therefore I divided the left side of the perineum, as is usually done in the vaginal extirpation of the uterus. The surface of the large tumor was scraped off with a sharp spoon, and whitish, friable, medullary masses of tumor tissue removed. This was followed by irrigation with two and one-half per cent carbolic acid and rubbing off the vaginal wall with carbolized gauze sponges. A transverse incision (see dotted line in Fig. 1 [8]), three or four inches long, was made in the perineum between the anus and the vulva, between the two tubera ischii. The posterior vaginal wall was separated from the anterior wall of the rectum. Dissection with blunt instruments, scalpel handle and scissors, ligating vessels when divided, was made to a depth of three or four inches till above the upper border of the large tumor. The wall of the rectum was in some places denuded almost to the mucous membrane. The dissection was made guided by the left index finger in the rectum, and the posterior vaginal wall grasped by forceps and held upward by an assistant.

Lateral incisions (Fig. 1 [9]) were now made on each side of the vagina from the transverse incision upward, along the introitus, into the labia minora. The left and right vaginal walls were dissected off with blunt instruments, as above stated, up to the lateral fornix or lower border of the broad ligaments. The vaginal portion of the uterus was now grasped with American bullet forceps, so as to move, pull down, to the right or left the cervix, to bring into view the paracervical tissues, and facilitate step ligature of the paracervical tissue or the lower portion of the lateral ligaments—as in the vaginal extirpation of the uterus —from the lateral border of the lacunæ upward and inward till the wall of the neck was reached. Before taking in a new amount of tissue to ligate *en masse*, it was carefully ascertained, by touch with the finger, that the tissue to be ligated was not hard and infiltrated, and that it was some distance off from the tumor or nodules.

In this manner the vaginal wall was loosened in both lateral and posterior lacunæ till close to the vaginal portion of the uterus, and cut off from the posterior lip and sides. The vagina

was now attached to the anterior lip, and posterior wall of the bladder, and the urethra only. With a catheter in the bladder as a guide, a semicircular incision was made through the vaginal wall close to the anterior lip of the vaginal portion of the uterus. The vagina was dissected off or separated from the posterior

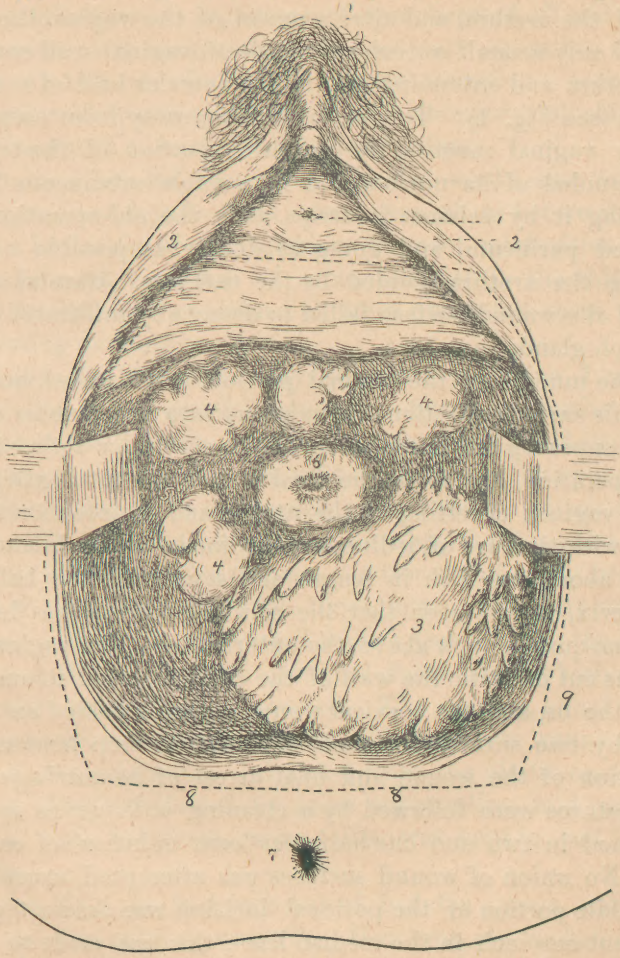

FIG. 1.—1, external orifice of the urethra; 2, labia minora; 3, large tumor on the posterior and left vaginal wall; 4, smaller flat tumors; 5, excoriated mucosa between the tumors; 6, the vaginal portion of the uterus with excoriated mucosa; 7, anus; 8, perineal incision; 9, perivaginal incisions.

wall of the bladder with blunt instruments, beginning at the right lacuna, working up toward the urethra and to the left, the vaginal portion of the uterus being pulled strongly down toward the perineum, and the already loosened walls of the

vagina being held or pulled upward against the symphysis pubis. This separation of the anterior vaginal wall was continued until the territory occupied by the flat tumors and the velvety, uneven mucosa was passed and normal, smooth vaginal wall was reached. After cutting off the anterior vaginal wall in the region of the urethra, and after removal of the vagina, there remained only a small anterior triangle of vaginal wall covering the urethra and extending out to the anterior half of the labia minora (see Fig. 1). To get still further away from suspicious velvety vaginal mucosa, the posterior portion of the triangle was denuded of its mucosa and immovable submucous tissue, removing it by scissors in strips, as in the old operations for lacerated perineum, and going as deeply as possible without opening the urethra, guided by the catheter. Careful palpation of the wound surface failed to detect any infiltrated places or lymph glands anywhere.

As the mucosa on the vaginal portion was diseased, and possibly this surface affection extended up into the mucosa of the cervix, supravaginal amputation of the cervix, or rather Schröder's operation, had to be the final step in the total extirpation of the vagina; curetting of the uterus and disinfection of the cavity with tincture of iodine and iodoform. After bilateral incisions about one inch in length and separating the halves of the cervix, it was seen that the cervical mucosa was healthy from one-quarter inch above the external os. The vaginal portion was cut off with the wall of the cervical canal to one inch above the os, and the cervical wound surfaces folded on themselves by two sutures for each of them, to stop hemorrhage. Inspection of the wound and final arrest of hemorrhage by a few ligatures were followed by a cleaning with gauze sponges moistened in two and one-half per cent solution of carbolic acid. No union of wound surfaces was attempted, except that the middle portion of the perineal incision was drawn together for about one inch in the median line; this was made to bring the anal opening out of almost direct contact with the perivaginal wound surface. The place of the vagina was loosely packed with sterilized iodoform gauze, and a voluminous antiseptic external dressing held by a T-bandage.

Remarks.—Hemorrhage during the operation was easily controlled and inconsiderable. During the extirpation of the vaginal wall in the right posterior fornix I made an opening into

the peritoneal cavity one-half inch in diameter, through which omentum protruded. It was at the time closed by a mass ligature.

The operation lasted one and one-half hours. Toward the end of the operation the pulse became 120 and weak, necessitating subcutaneous injections of camphorated oil and digitalis. I considered it dangerous to do any more operating then, and gave up the intended vagino-plastic operation; to cover the wound with paravaginal mucous membrane and skin would have required at least one-half hour's time.

Course after the Operation.—In five weeks she was able to sit up and had regained the same strength as before the operation. Irritation of the bladder, frequent micturition without any abnormal condition of urine, followed in the third week; later on the urine contained albumin and a few casts, probably indicating amyloid nephritis.

March 23d, forty-four days after the operation, I wanted to make the vagino-plastic operation. She was anesthetized and placed in the lithotomy position. A narrow, funnel-shaped, granulating cavity leads up toward the uterus; in the upper portion it was so narrow as to scarcely permit the tip of my finger to pass. The granulation surface was apparently normal and was scraped off with a sharp spoon. After disinfecting irrigation I tried to dilate laterally, with blunt instruments, out toward the tubera ischii. In so doing I made a tear through the thin posterior wall, opening into Douglas' fossa, from which a flap of omentum immediately prolapsed. The opening, about one inch in diameter, was loosely packed with iodoform gauze after replacing the omentum. I desisted from the plastic operation, as this is always followed by some suppuration, and packed the vagina with iodoform gauze. She was kept in bed for three weeks.

April 20th she had been out of bed for a week, and thought that she was gaining strength. However, she looked pale and cachectic. Albumin and casts in the urine indicated chronic nephritis.

Now, seventy-two days after the extirpation of the vagina, examination reveals the following condition: Vulva normal; entrance to the vagina narrow; slight odorless secretion; no pain; a finger passes in two inches; at a height of one and one-half inches is a constricting ring, through which the end of the

index finger narrowly passes into a larger space, the bottom of which can be felt, but the uterus cannot be distinctly made out.

Rectal examination shows a nodule the size of a hazelnut on the anterior wall of the rectum, one and a half inches above the sphincter ani. About one inch higher up, in the left broad ligament, is a diffused, hard thickening and a movable nodule the size of an almond. Thus there was relapse of the carcinoma *in loco* in these two places. I did not consider her a fit subject for further attempts at a radical operation, especially on account of the nephritis, and she left for her home.

Description of the Specimen (see Figs. 1, 2, and 3).—1. The large tumor on the posterior and lateral wall, extending from the vulva to near the vaginal portion of the uterus, is two and three-fourths inches long, two and three-fourths inches broad, and one-half inch thick. Its surface is irregular, ragged (from scraping with the sharp spoon), in some places papillomatous.

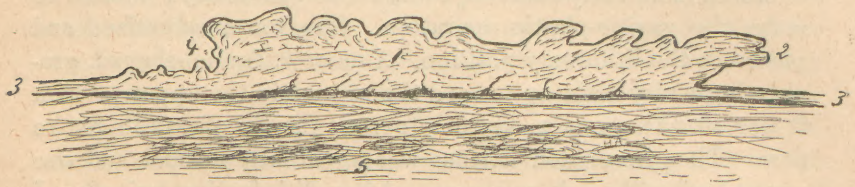

FIG. 2.—Section through the large tumor and post-vaginal tissue; 1, the large tumor; 2, its borders overlapping the surrounding vaginal wall; 3, vaginal wall; 4, papillomatous or wart-like thickening of the vaginal mucosa near the large tumor; 5, the post-vaginal connective and adipose tissue.

Its borders are elevated, or even overlapping the surrounding vaginal mucosa (Fig. 2 [2]). The rectal surface is apparently free from infiltration in the loose connective tissue and adjoining tissue that covers it.

2. The smaller, flat, sessile, round, nodulated tumors on the right wall, right fornix, and anterior wall of the vagina appear like conglomerations of three to five smaller tumors. There are four such conglomerate tumors (Fig. 1 [4]). They are whitish or red, rather smooth on the slightly elevated surfaces, as if covered with a distended, not ulcerated, mucosa.

3. The vaginal wall between the tumors and on the vaginal portion is uneven, velvety or warty, as the surface of a mole or flat wart on the skin, or like the surface of the skin in ichthyosis (see Fig. 2 [4]). In other places it is excoriated, looking like the finely ragged bottom of a tuberculous ulcer (see Fig. 1 [5]).

Microscopical Examination.—1. Large tumor. Transverse section shows no epithelium; irregular nests and islands of large pavement-shaped epithelial cells with large nuclei, oval, round, or irregular; no *Stachel* or *Riffcellen;* no cancroid pearls. The carcinoma islands extend down into the muscularis, where they become smaller and are surrounded by a zone of granulation tissue. In the deeper layers of the muscularis there are no carcinoma nests, but all the way through there is an interstitial infiltration with embryonal cells or leucocytes, especially in the perivascular spaces. This infiltration extends beyond the muscularis into the paravaginal connective and adipose tissue.

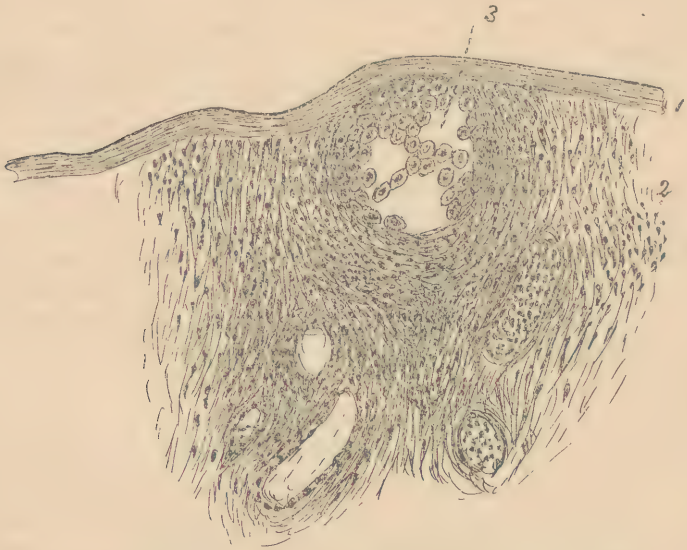

FIG. 3.—Microscopic section from the vaginal portion of the cervix: 1, thin layer of pavement celled epithelial covering; 2, the mucous membrane, in which, close to the surface, lies 3, a small carcinoma island.

2. The flat tumors are mostly covered with a thin layer of epithelium, under which is a layer of carcinoma tissue; the islands of this are mostly longitudinal and arranged perpendicularly from the surface down to the muscularis. In the latter are here and there smaller, round carcinoma nests embedded in granulation tissue, but on the whole the line between tumor and subjacent tissue is well defined, showing little tendency to rapid invasion of the surrounding tissues. Through the whole wall is a considerable interstitial infiltration with leucocytes.

3. The vaginal portion (see Fig. 3). A thin layer of pave-

ment-celled epithelium is found in some places; but mostly there is no epithelium, and the mucosa is naked, with an irregular surface from which the mucous glands with their cylindrical epithelium extend down. There is no proliferation of the epithelial cells in the glands. In a number of sections I find in one only a small but typical round nest of pavement-shaped epithelial cells immediately below the epithelium (a carcinoma island) (see Fig. 3 [3]). The muscular wall of the vaginal portion shows some perivascular interstitial infiltration with leucocytes, especially near to the mucosa, but not nearly as prominent as in the vagina.

Remarks.—The tumor is a large-celled, pavement-celled carcinoma. The tumor territories are rather well defined, which might indicate relative benignancy from little tendency to diffusion. On the other hand, the diffused interstitial infiltration of the surrounding tissue with leucocytes, a lymphangitis, possibly from infection through the denuded vaginal wall, signifies malignancy, as it favors rapid extension through invasion of the lymphangitic areas by carcinoma cells. We see this condition in some cases of carcinoma of the breast, where a not well-defined redness and a slight swelling of the surrounding skin indicate a lymphangitis, often, but not always, mixed carcinomatous and septic. This condition is so ominous as to absolutely contraindicate operating in the great majority of cases. The diffused velvety or excoriated appearance of the vaginal wall signifies not merely a surface inflammation, but also extension of the carcinoma to, or implantation of the carcinoma cells in, parts of the surface distant from the visible tumors (see Fig. 3 [3]). The whole of such a wall or surface surrounding a carcinoma must consequently be removed.

Primary Carcinoma of the Vagina. *Definition.*—Carcinoma of the vagina is common enough if we count the carcinomata which originate in the cervix or vaginal portion and secondarily extend down into the vagina. Of a primary carcinoma of the vagina we must require that it originates in the vaginal wall proper. It may extend to the vaginal portion secondarily; and it may be difficult in a late extensive case to trace the place of primary origin, especially in the diffused, infiltrating forms when the tumor extends up into the cervical canal. Such cases should not be counted as primary vaginal carcinomata.

Forms.—As in the sarcomata, so we find two forms of vaginal

carcinoma: the localized, papillary, so-called cancroid, and the diffused, scirrhous or medullary carcinoma. The localized carcinoma, or cancroid, forms well-defined, circumscribed, flat, sessile, or more globular prominent tumors in the mucous membrane proper, or rather in the surface of the mucosa, often with raised or overlapping borders, with a papillary, lobulated, cauliflower-like surface, often covered with cockscomb-like protuberances.

The diffused, infiltrating carcinoma transforms the vaginal wall into a stiff, narrowed tube. It has a smooth surface before epithelial necrosis takes place. Its seat is essentially in the deeper parts of the mucous membrane and submucous tissue. It has no elevated or well-defined borders, but forms a diffused thickening of the vaginal wall.

Frequency.—Vaginal carcinoma is a rare disease. Küstner[1] could collect from the literature in 1875 only twenty-four cases, to which Preuschen[2] in 1883 added nine, making in all thirty-three. If we count the nineteen cases of West[3]—about which Preuschen and Küstner say that it is doubtful if all of them were primary vaginal carcinomata—and add one case from Meyer,[4] one from Teuffel,[5] one from Menzel,[6] one from Grammaticati,[7] and my case, we get a total of fifty-seven cases. The scarcity of vaginal carcinoma is the more remarkable when contrasted with the frequency of carcinoma of the uterus. As an example, it has been calculated that not less than five thousand to twenty-five thousand women died of uterine carcinoma in England during a period of fourteen years, from 1847 to 1861[8] (Simpson, Schröder, Preuschen). One-third of the carcinomata in women are located in the uterus (Schröder); of four hundred and forty-one carcinomata in both sexes, one hundred and thirteen were uterine (E. Wagner).

Etiology.—1. Gravidity and childbirth undoubtedly exert a potent influence on the origin of carcinoma of the uterus. Gus-

[1] Küstner, Archiv für Gyn., Bd. ix., p. 279.

[2] Preuschen, "Real-Encyclopedie der gesammten Heilkunde," v. Eulenberg. Bd. xiv., Bogen 19 to 27, p. 368. Vagina. Edition of 1883.

[3] West, "Lehrbuch der Frauenkrankheiten," 1870, p. 829; cited from Preuschen, l. c.

[4] Meyer, Zeitschrift für Geburtshülfe und Gyn., Bd. xxii., H. 1, p. 179.

[5] Centralblatt für Gyn., 1885, No. 19, p. 345.

[6] Menzel, Centralblatt für Gyn., 1885, No. 16, p. 244.

[7] Grammaticati, Centralblatt für Gyn., 1885, No. 16, p. 243.

[8] Gusserow, "Ueber Carcinoma Uteri," Volkmann's Samml. klin. Vorträge, No. 18, 1871.

serow has calculated, for four hundred and fifty women suffering from uterine carcinoma, 5.19 as the average number of children for each. Küstner found for twenty-four women with vaginal carcinoma an average of only 2.8. Preuschen seeks the explanation of this difference in the fact that the vagina takes no active part in gestation as compared with the uterus, and, further, that the traumatism to the uterus during childbirth is much greater than to the vagina proper. Laceration of the cervix or vaginal portion is almost physiological, whilst partial ruptures of the vagina, excluding the perineum as belonging to the vulva, are rarely found—according to Winckel, in one to one and a half per cent of births.

2. *Pessaries.*—Continued traumatism from pessaries, perhaps ill-fitting, sometimes forgotten in the vagina and left for many months or years, will occasionally determine the location of a vaginal carcinoma. Morgagni (Preuschen) saw two almond-shaped indurations in the vagina caused by a pessary. Hegar[1] found in a woman of 56, who died later with general carcinosis of the abdominal organs, two partly ulcerated carcinoma nodules, corresponding to the places where a closed Hodge pessary pressed against the descending ramus of the pubic bones. Kaltenbach[2] found in a woman of 35, who had used a Hodge pessary for a long time, a carcinoma high up in the posterior fornix where the posterior arch of the pessary had pressed. Meyer[3] saw a woman of 60 who, for prolapse of the vagina, had used a Hodge pessary of celluloid and left it in continuously for over a year. A purulent secretion mixed with blood caused an examination to be made. Erosions were found on the posterior lip of the vaginal portion and on the posterior vaginal wall. They healed in a few weeks, and later the pessary was reintroduced. Six months afterward the discharge returned, and there was now found, one and a half inches behind the posterior lip, a flat red tumor, one inch in diameter, filling the posterior fornix, elevated five to six millimetres above the vaginal surface, soft, lobulated, with beginning ulceration on the surface. Another smaller tumor of the same character was seen lower down on the middle third of the posterior vaginal wall, in the place where

[1] "Operative Gynecology," 3d edition, 1886, p. 183.

[2] Kaltenbach, ibid.

[3] Meyer, "Zur Etiologie des Scheidenkrebses," Zeitschrift für Geburtshülfe und Gyn., Bd. xxii., p. 179.

the tumor in the fornix lay in contact with it. Microscopic examination showed the tumor to be carcinoma. At the attempted local extirpation it was found that the upper large tumor extended both to the vaginal portion and the cervix and to the posterior parametrium; thus vaginal extirpation of the uterus was combined with removal of the diseased part of the vagina.

In favor of the probability that pessaries may cause carcinoma are some observations reported by Küstner, who saw a thickened border of epithelium, and even small warty excrescences, surrounding the places of pressure atrophy caused by pessaries, and these places were sometimes very obstinate in healing.

Prolapse of the uterus and vagina does not seem to predispose to the disease. Cohabitation is in this respect uncertain. Three of Küstner's nulliparous patients were not married. As to age, the vaginal carcinoma is most common in the fourth decennium; next comes the sixth, and then the fifth and third. One case was in a child 9 years old, one between 5 and 10, one between 10 and 20. The uterine carcinoma has its greatest frequency in the fifth decennium, followed by the fourth and sixth; consequently the most common period is about ten years earlier for the vaginal than for the uterine carcinoma.

Heredity was noted in two cases. Baldwin's [1] patient stated that her father and grandfather had died from cancer. My patient had a grandfather and an aunt affected with carcinoma, respectively of the tongue and of the mammary gland.

The seat of the carcinoma is in the great majority of cases the posterior vaginal wall. It was so found in ten of Küstner's twenty-seven cases, in ten of Preuschen's eleven cases, in Teuffel's, Grammaticati's, Menzel's, Meyer's, and my case, or in twenty-five out of thirty-nine cases. In two cases it occupied the lateral wall, and in two cases (of which the one of West is doubtful, whilst Baldwin's patient had a carcinoma the size of a walnut near the urethra) the anterior wall. In several of the cases of large, apparently circular tumors there was found a narrow rim of healthy vaginal wall extending from the anterior lip of the vaginal portion to the introitus vaginæ, proving that the place of origin was the posterior wall (Küstner). Preuschen sees the cause of this predilection in the relation between the posterior vaginal wall and the vaginal portion with

[1] Baldwin, Philadelphia Medical Times, 1870, p. 15.

the os. An enlarged vaginal portion rests and moves against the posterior wall, where the secretions from the uterus are, so to say, rubbed into the mucous membrane constantly during movements of the body or contraction of the abdominal muscles, especially where the uterine ligaments and vaginal wall have lost some of their tonus.

Symptoms.—Hemorrhage, purulent discharge, and pains are almost invariably found. Hemorrhage is an early symptom (Preuschen). Küstner states that hemorrhage is present in eight out of twelve cases. It is often caused by cohabitation, and a small tumor may be made to bleed easily in this way, as smaller papillomatous excrescences are often very vascular when carcinomatous. Difficult defecation in a constipated patient will sometimes start the hemorrhage. A discharge of purulent or watery secretion not tinged with blood, from the ulcerated surface, is more rare; it was present in two of Preuschen's twelve cases. More common is a purulent secretion with streaks of blood, the quantity of which is increased by coitus, exploration, or defecation. Pain was regarded as an early symptom by West. Küstner found pain absent in one-half the cases. In one case painful coitus was the only symptom. It is often not till late in the disease that pain becomes a prominent symptom. It is then often aggravated by defecation, which causes pressure upon and protrusion of the posterior vaginal wall, where, as we saw, the oldest and often ulcerated portion of the tumor is found. Invasion of the bladder causes urinary tenesmus and frequent urination. A dull pain deep down in the pelvis, and a feeling of pressure downward, come on late in the disease.

Course.—The vaginal carcinoma shows a tendency to early necrosis and rapid extension locally as well as to adjacent organs, first to the lymph glands in the paracervical connective tissue, and later to the inguinal glands when the disease extends down near the vulva. The rectum and bladder are invaded later on, fistulæ form, and the vagina forms finally a large cavity, in which feces and urine pass over the ulcerated surface, and the horrible condition so well known in cases of cervical carcinoma makes the patient an object of pity. Diffuse carcinosis of the peritoneum is more common than metastases in distant organs.

Diagnosis.—When the symptoms have called for a digital examination of the vagina it is usually easy to diagnose a malig-

nant tumor. But as the sarcoma presents nearly the same appearance as the carcinoma, a differential diagnosis between the two can only be made by microscopic examination. It is of the utmost importance to regard any erosion caused by a pessary with suspicion, especially if it is surrounded by thickened or papillary, uneven epithelium, and if it persists in spite of removal of the pessary and ordinary antiseptic treatment.

Treatment.—Complication of gravidity with carcinoma. Diffused or annular carcinoma usually causes so much retraction of the vagina as to prevent delivery. Roulston tried to dilate the carcinomatous vagina with sponge tents when the labor pains had already commenced. It required three days of dilatation before a finger could be passed through the stricture and feel the normal os. The patient died nineteen days later, not delivered, and the autopsy revealed a dead but normally developed child at full term. Cesarean section would, as Preuschen remarks, probably have saved the child and possibly prolonged the life of the mother. An isolated tumor on the posterior vaginal wall, even a voluminous one, may, especially in a multipara with lax vaginal wall, as in Bailly's case, be pushed out of the vagina before the child's head, and retreat back again into its old place after delivery. When the carcinoma is diagnosed before the time of delivery it should, according to Schröder's advice, be extirpated during the pregnancy, if it cannot be easily pushed out of the vagina by the child's head.

Induced labor at the fifth month was resorted to in a case reported by Küstner. A considerable quantity of carcinomatous tissue was first removed by curette, followed by carbolized injections. No reaction ensued. Eight days later labor was induced by an elastic catheter in the uterus; spontaneous expulsion of a dead child. Septicemia followed and caused death on the seventh day.

Martin succeeded in dilating a carcinomatous vagina sufficiently to permit of extraction of the child by forceps. After delivery of the placenta, and after contraction of the uterus had taken place, he shelled out the tumor at its base. The patient recovered and the place of the carcinoma healed over, but general carcinosis caused death after one year. In this case the carcinoma was not a diffused one, as there was a free space on the anterior vaginal wall two finger-breadths in diameter.

Radical removal of a vaginal carcinoma should always be

attempted if practicable. It has been performed a number of times in cases of circumscribed tumors, but only once in a diffused carcinoma, by Schröder, in addition to, or before, the case operated on by me.

Circumscribed carcinomatous tumors have been removed by the galvano-caustic loop. Spiegelberg and Grünewald recommend the method. Grünewald's patient was operated on for a secondary tumor on the posterior vaginal wall—a relapse after a primary carcinoma of the cervix which had been amputated six months before. Toward the end of the operation a severe hemorrhage occurred and proved fatal in six minutes, before it was possible even to ascertain the source. The autopsy showed that the anterior branch of the hypogastric artery, half the size of a goose quill, had been divided obliquely.

Excision of circumscribed tumors by knife was practised by Schröder in three cases of carcinoma on the posterior vaginal wall, as follows: Incision in healthy vaginal wall encircling the tumor, and through the whole thickness of the wall, was followed by dissection from above downward, thus removing the carcinoma from the subjacent tissues. In one of the cases the posterior lip of the cervix was also removed. An opening into the Douglas fossa was closed by a ligature. One case died from sepsis, two others recovered. The vaginal defect is, if possible, drawn together by sutures and a drainage tube inserted behind the vagina. If the vaginal wound is so large as not to permit of union by sutures, then the hemorrhage is stopped by ligatures or thermo-cautery, and the wound packed with iodoform gauze.

The operations in the recto-vaginal septum should be guided by two fingers of the left hand in the rectum, and it is thus possible to feel that no carcinoma nodules are left.

Operation for diffused carcinoma was first performed by Schröder.[1] In an elderly woman with a carcinoma that extended over a large portion of the vagina, he removed the whole of the vagina and the cervix, operating from below upward, dissecting out the vagina like the finger of a glove. The wound surface was cauterized with a Paquelin burner, and an iodoform-gauze tampon inserted. The patient recovered from the operation, but relapse *in loco* speedily followed.

[1] Schröder: "Handbuch der Krank. d. weibl. Sexualorgane," 6th edition, 1884.

Removal of the vaginal carcinoma combined with total extirpation of the uterus was done by Meyer in his case related above. This procedure was indicated by extension of the carcinoma to the cervix.

If the lateral parametrium is invaded and the infiltration extends up into the lower portion of the broad ligament, we would have, if we concluded to attempt removal at all, to resort to total extirpation of vagina and uterus by the sacral method.

The prognosis of the operation by knife, even in the most extensive cases, is good, as far as the immediate results are concerned. Asepsis, drainage, and packing with iodoform gauze proved efficient to insure relative asepsis and recovery from the operation in Schröder's, Meyer's, and my own case.

As to permanent cure the prognosis is exceedingly grave. Breisky, in 1886, stated that all operative attempts had proved futile, and it may be said that no observations since then have proved that there are exceptions to this sinister rule.

A local relapse, a continuance of growth, is often reported, coming on very rapidly. In Martin's first case a local tumor was felt twenty-seven days, in my case seventy-two days, after the operation. But in other cases, if not a radical cure, at least temporary comfort and prolongation of life have been seen. Menzel's patient was well for one year and three months, when a relapse of the purulent discharge was reported, and makes a relapse probable. The remaining cases have been reported too short a time after the operation to permit of any conclusions as to the future fate of the patients.

The future of operations for vaginal carcinoma will depend upon early diagnosis and extensive operating. As Breisky states, only very few cases have as yet come to be operated on at a period when there was any chance for removal. It is to be hoped and expected that when we operate away off from the tumor, as Kaltenbach advises, irrespective of rectum and bladder, defects of which can be made to heal by careful suturing, better results and some radical cures may be recorded for carcinoma in the vagina as well as in other parts of the body.

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